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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/487,467	01/19/2000	Shoji Hayakawa	1359.1023	3201

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EXAMINER

BOOKER, KELVIN E

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 02/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/487,467

Applicant(s)

HAYAKAWA ET AL.

Examiner

Kelvin E Booker

Art Unit

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on January 19, 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5 and 6 is/are rejected.
- 7) ☒ Claim(s) 2-4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Detailed Office Action.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

2. The abstract of the disclosure is objected to because the length exceeds 150 words.

Correction is required. See MPEP § 608.01(b).

Requirement for Information – 37 USC 1.105

3. Applicant and Assignee of this application are required under 37 CFR 1.105 to provide the following that the Examiner has determined is reasonably necessary to the examination of this application.

In response to this requirement, please provide the citation and a copy of each publication that any of the applicants authored or co-authored and which describe the disclosed subject matter of verifying speakers respective of the claimed invention.

Please state whether any search of prior art was performed. If a search was performed, state the citation for each prior art collection searched. If any art retrieved from the search was considered relevant to demonstrating the knowledge of a person having ordinary skill in the art to the disclosed method and system of speaker verification respective of voice analysis based upon distance calculations, please provide the citation for each piece of art considered and a copy of the art.

In responding to those requirements that require copies of documents, where the document is a bound text or a single article over 50 pages, the requirement may be met by providing copies of those pages that provide the particular subject matter indicated in the requirement, or where such subject matter is not indicated, the subject matter found in applicant's disclosure.

The fee and certification requirements of 37 CFR 1.97 are waived for those documents submitted in reply to this requirement. This waiver extends only to those documents within the scope of this requirement under 37 CFR 1.105 that are included in the applicant's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this requirement and any information disclosures beyond the scope of this requirement under 37 CFR 1.105 are subject to the fee and certification requirements of 37 CFR 1.97.

The applicant is reminded that the reply to this requirement must be made with candor and good faith under 37 CFR 1.56. Where the applicant does not have or cannot readily obtain an item of required information, a statement that the item is unknown or cannot be readily obtained will be accepted as a complete reply to the requirement for that item.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims one, five and six** are rejected under 35 U.S.C. 102(b) as being anticipated by Itakura, "Minimum Prediction Residual Principle Applied to Speech Recognition".

As per claim one, Itakura teaches of a speaker verification apparatus comprising:

A. an identity claim input part to which an identity claim is input (see page 67, column 1, section: *Abstract*; and page 70, column 2, section: *V. Experimental Procedure and Results*, subsection *Speech Input*);

B. a speaker selecting part for selecting voice information of a registered speaker corresponding to the identity claim input to the identity claim input part (see page 67, column 2, section: *I. Introduction*, paragraph 3 through page 68, paragraph 1);

C. speaker storing part for storing voice information of speakers (see page 70, column 2, section: *V. Experimental Procedure and Results*, subsection *Speech Input*);

D. a voice input part to which a voice is input (see page 70, column 2, section: *V. Experimental Procedure and Results*, subsection *Speech Input*);

E. voice analyzing part for analyzing the voice input to the voice input part (see page 70, column 2, section: *V. Experimental Procedure and Results*, subsection *Speech Input*);

F. a speaker distance calculating part for calculating a verification distance between a feature parameter of the input voice and that of the voice of the registered speaker and the speaker distances between a feature parameter of the input voice and those of the voices of speakers other than the registered speaker that are stored in the speaker sorting part, based on the analysis results of the voice analyzing part and the voice information stored in the speaker storing part (see page 68, section: *II. Distance Measure For An All-Pole Model*, paragraphs 1-3;

and page 71, column 1, section: *V. Experimental Procedure and Results*, subsection *Recognition and Result*); and

G. a speaker judging part for determining whether or not the input voice matches the registered speaker corresponding to the input identity claim, the speaker verification apparatus further comprising:

1) a false acceptance error rate input part to which a false acceptance error rate is input as a threshold, the false acceptance error rate being predetermined by a system manager or a user or adjustable depending on performance (see page 71, column 1, section: *V. Experimental Procedure and Results*, subsection *Recognition and Result*); and

2) a distribution estimating part for obtaining a probability distribution of interspeaker distances based on the speaker distances calculated in the speaker distance calculating part, wherein the speaker judging part determines that the input voice is the voice of the registered person specified by the identity claim, in the case where the verification distance calculated in the speaker distance calculating part is included in a region defined by the input false acceptance error rate in the probability distribution of the interspeaker distances (see page 68, column 1, section: *II. Distance Measure For An All-Pole Model*, through page 69, column 2, section: *III. Isolated Word Recognition*).

As per claim five and claim six, the same limitations are subjected to in claim one, therefore the same rejections apply (see claim one above).

Allowable Subject Matter

6. **Claims 2-4** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- A. Potts et al., U.S. Patent No. 6,593,956;
- B. Yamada et al., U.S. Patent No. 6,006,184;
- C. Goldenthal et al., U.S. Patent No. 6,205,424;
- D. Nishimura et al., U.S. Patent No. 5,461,697;
- E. Higgins, U.S. Patent No. 5,339,385;
- F. Bahler, U.S. Patent No. 5,271,088;
- G. Uchiyama et al., U.S. Patent No. 5,121,428;
- H. Wrench, Jr. et al., U.S. Patent No. 4,837,830;
- I. Holmgren et al., U.S. Patent No. 4,363,102;
- J. Kuhn et al., U.S. Patent No. 4,292,471;
- K. Hayakawa et al., "The Influence of Noise on the Speaker Recognition Performance Using the Higher Frequency Band";
- L. Hayakawa et al., "Text-Dependent Speaker Recognition Using the Information in the Higher Frequency Band";

M. Itakura, "Minimum Prediction Residual Principle Applied to Speech Recognition";
N. Itakura et al., "Distance Measure for Speech Recognition Based on The Smoothed
Group Delay Spectrum";
O. Kajita et al., "Spectral Weighting of SBCOR for Noise Robust Speech Recognition";
and
P. Kajita et al., "Subband-Autocorrelation Analysis and its Application for Speech
Recognition".

8. An inquiry concerning this communication or earlier communications from the examiner
should be directed to Kelvin Booker whose telephone number is (703) 308-4088. The examiner
can normally be reached on Monday-Friday from 7:00 AM-5:30 PM EST.

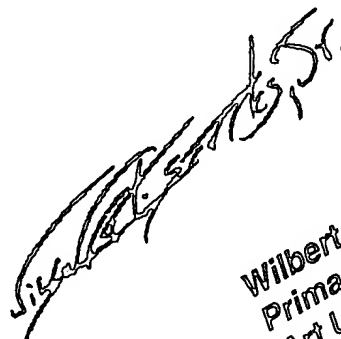
If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Anil Khatri, can be reached on (703) 305-0282. The fax number for the organization
where this application or proceeding is assigned is (703) 872-9306.

An inquiry of a general nature or relating to the status of this application proceeding
should be directed to the receptionist whose telephone number is (703) 305-3900.

K.E.B.

Art Unit 2121

January 28, 2004



**Wilbert L. Starks, Jr.
Primary Examiner
Art Unit - 2121**